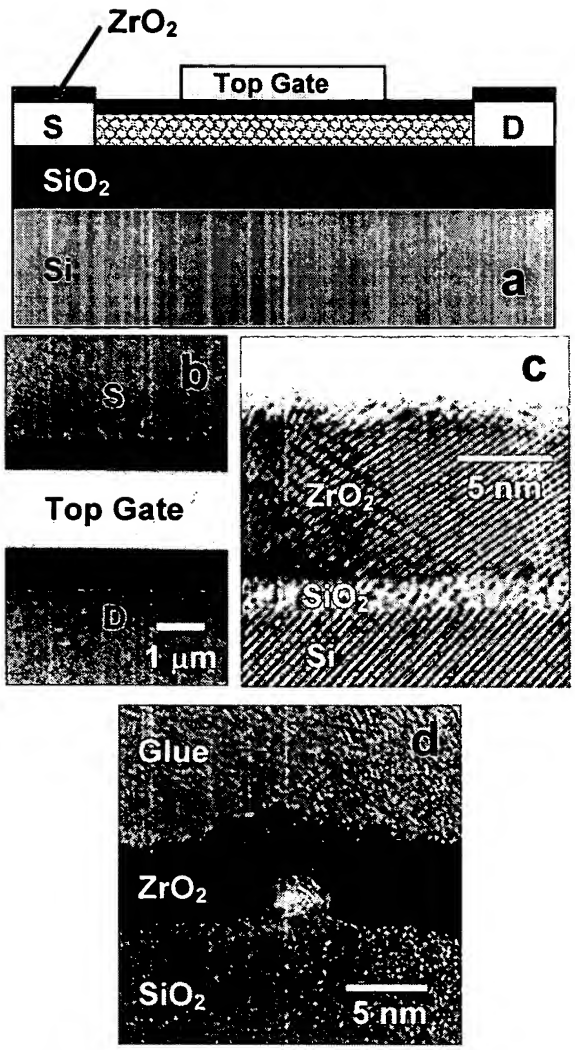
ZrO2
Top Gate
S
D
SiO2
Si
a
S
b
Top Gate
D
1 μm
c
ZrO2
5 nm
SiO2
Si
Glue
d
ZrO2
SiO2
5 nm

Figure 1

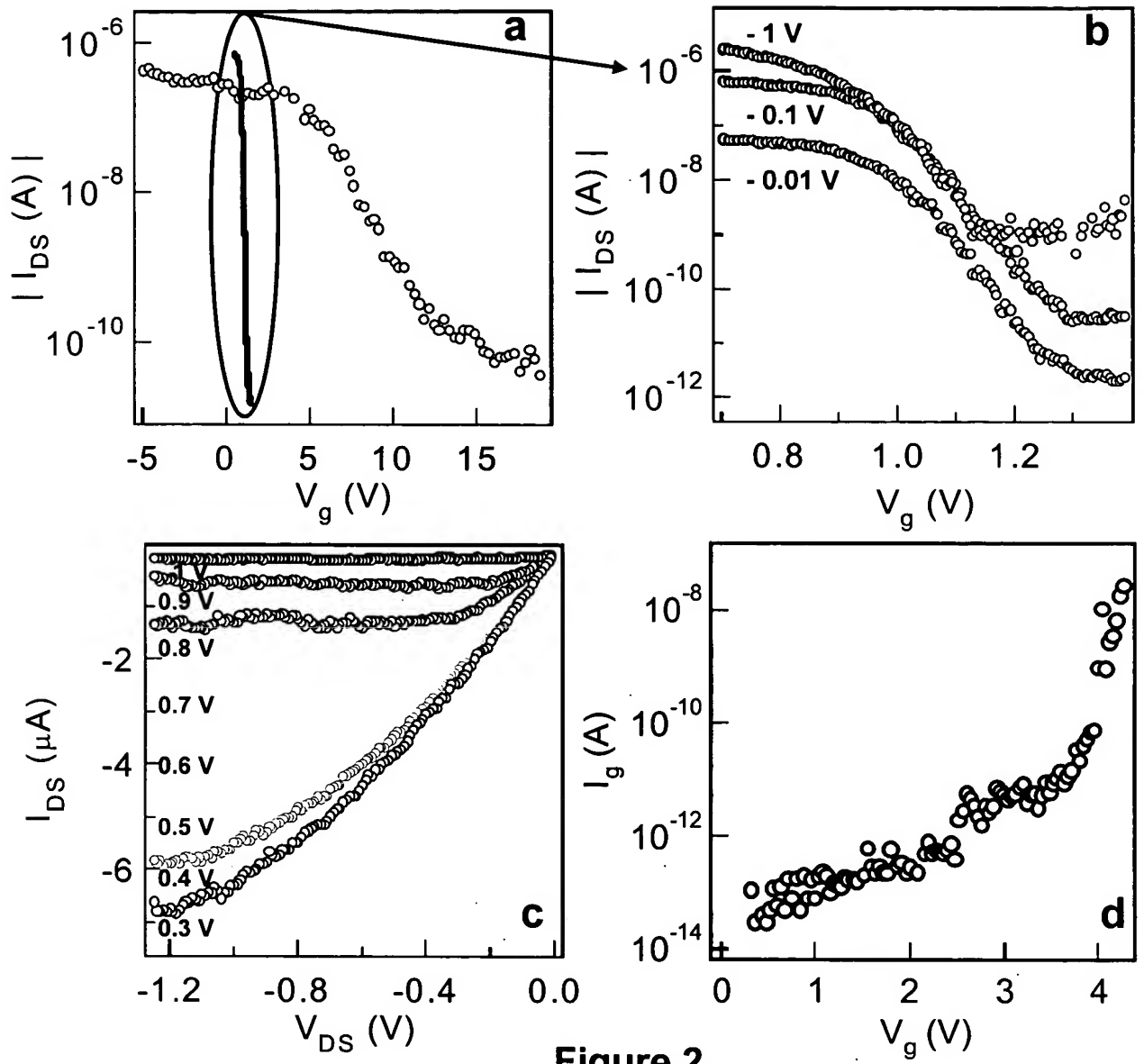
a
b
c
d
10^{-6}
10^{-8}
10^{-10}
10^{-12}
10^{-14}
$|I_{DS}(A)|$
V_g (V)
-5 0 5 10 15
0.8 1.0 1.2
- 1 V
- 0.1 V
- 0.01 V
1 V
0.9 V
0.8 V
0.7 V
0.6 V
0.5 V
0.4 V
0.3 V
I_{DS} (μA)
V_{DS} (V)
-1.2 -0.8 -0.4 0.0
-2
-4
-6
I_g (A)
0 1 2 3 4

Figure 2

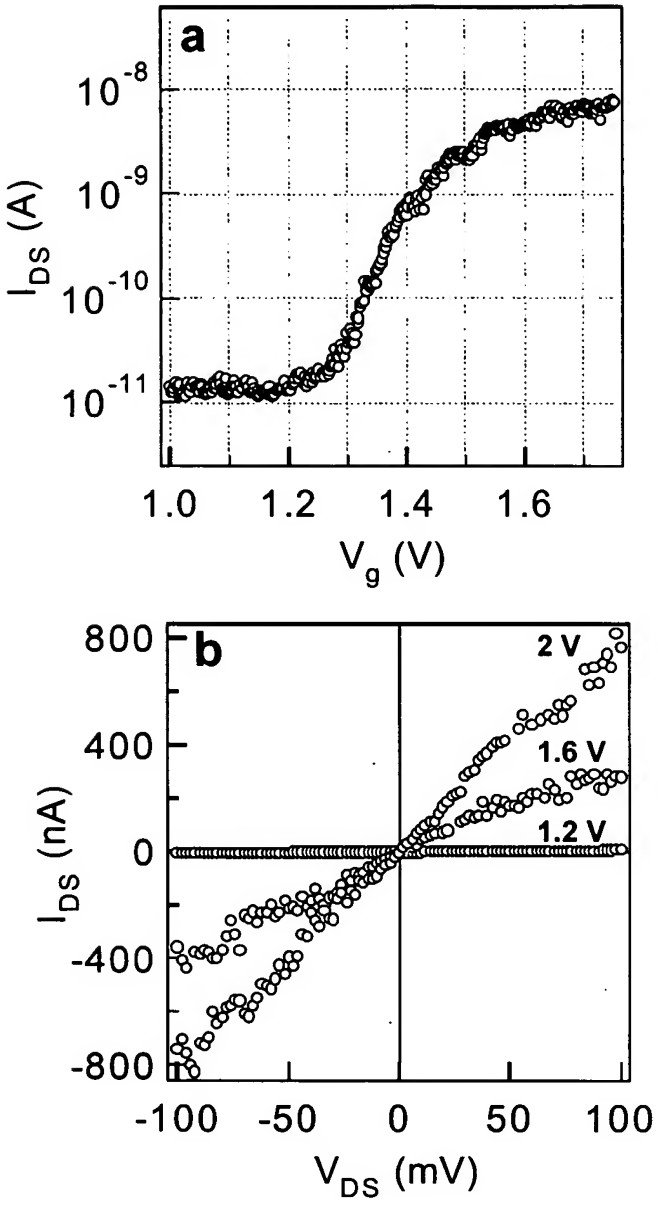
a
10^{-8}
10^{-9}
10^{-10}
10^{-11}
I_{DS} (A)
1.0
1.2
1.4
1.6
V_g (V)
b
800
400
0
-400
-800
I_{DS} (nA)
2 V
1.6 V
1.2 V
-100
-50
0
50
100
V_{DS} (mV)

Figure 3

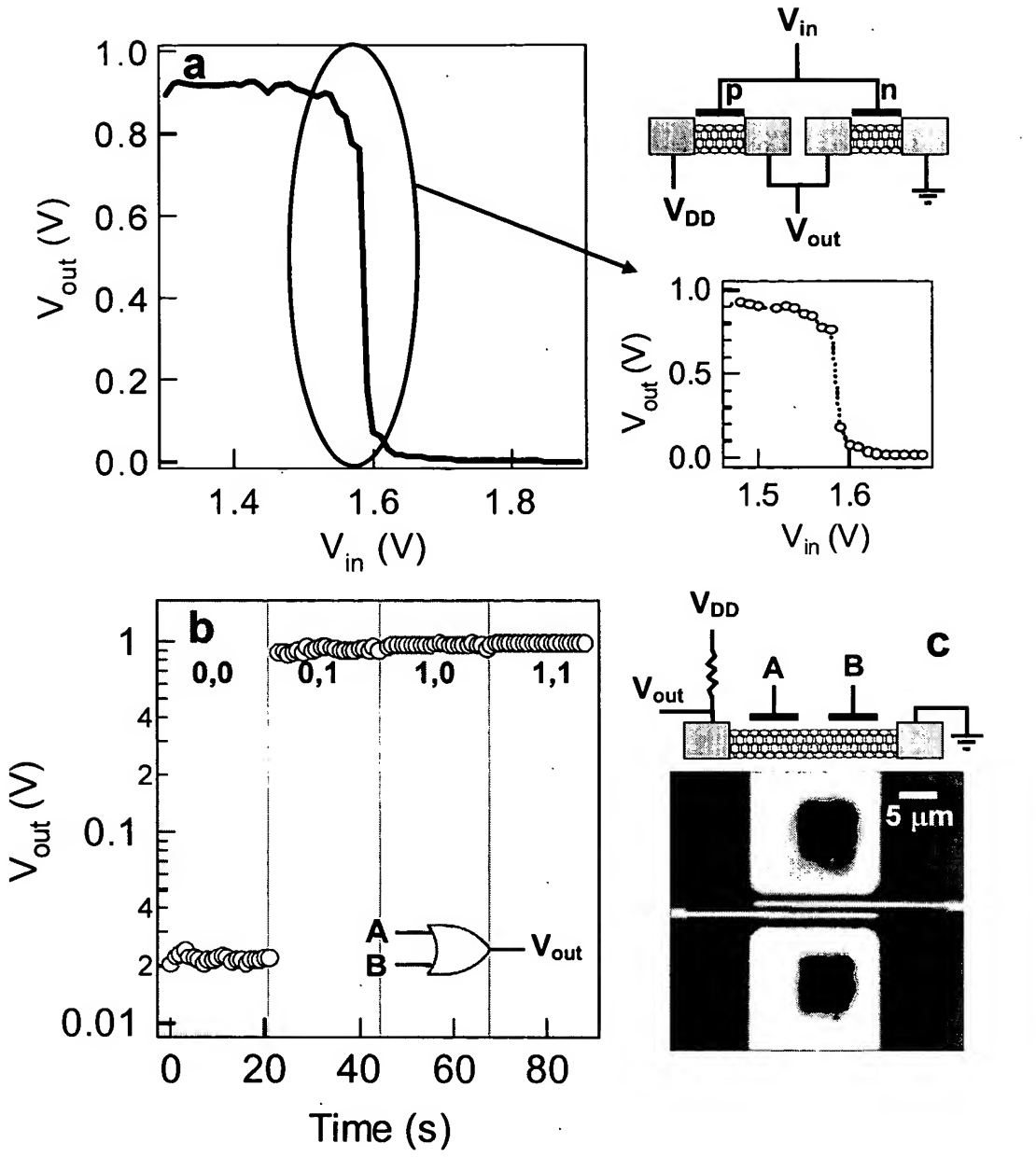
a
1.0
0.8
0.6
0.4
0.2
0.0
V_{out} (V)
1.4
1.6
1.8
V_{in} (V)
V_{in}
p
n
V_{DD}
V_{out}
1.0
0.5
0.0
V_{out} (V)
1.5
1.6
V_{in} (V)
b
1
4
2
0.1
4
2
0.01
V_{out} (V)
0,0
0,1
1,0
1,1
A
B
V_{out}
0
20
40
60
80
Time (s)
V_{DD}
V_{out}
A
B
C
5 µm

Figure 4